

文章摘要

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饲料中补充赖氨酸和蛋氨酸对罗非鱼生长和消化率的影响

Effects of lysine and methionine supplements in diets on growth and digestibility of tilapia (*Oreochromis niloticus* × *O. aureus*)

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英文关键词: [Tilapia](#) [Soybean meal](#) [Peanut meal](#) [Lysine](#) [Methionine](#) [Growth](#) [Digestibility](#)

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中文摘要:

以初始体重 7.30 ± 0.12 g的奥尼杂交罗非鱼幼鱼为对象, 在池塘内浮式网箱中进行为期70 d的养殖试验。试验配制5种等氮、等能、低鱼粉含量(2%)的实用饲料(D1~D5)。其中, D1为对照组, 含有30%豆粕; 在D2里用花生粕蛋白替代D1中50%的豆粕蛋白; D3~D5是在Diet 2的基础上分别添加0.25%晶体赖氨酸+0.05%晶体蛋氨酸、0.25%微囊赖氨酸+0.05%微囊蛋氨酸、0.50%微囊赖氨酸+0.10%微囊蛋氨酸。饲料中添加 $0.5\% \text{Cr}^{203}$ 作为外源指示剂用于测定营养成分或能量的表观消化率。结果表明, 罗非鱼的成活率在各组之间差异不显著($P>0.05$); 对照组与D5组罗非鱼的特定生长率差异不显著($P>0.05$), 均显著高于其他三组($P<0.05$), D2组最低; D2与D3组的饲料系数显著高于D5和对照组($P<0.05$)。D5和对照组的蛋白质效率显著高于D2与D3组($P<0.05$); 罗非鱼的肥满度在对照组、D4与D5组间差异不显著($P>0.05$), 均显著高于D2与D3组($P<0.05$); 罗非鱼的脏体比和肝体比在各组间差异不显著($P>0.05$); 干物质、脂肪、总能及必需氨基酸的消化率在各组间差异不显著($P>0.05$); 蛋白质的表观消化率在对照组、D4与D5组之间无显著差异, 但均显著高于D2组($P<0.05$); 花生粕替代豆粕及添加晶体或微囊氨基酸对罗非鱼体常规成分和必需氨基酸均无显著影响($P>0.05$)。

英文摘要:

A 10-week feeding trial was conducted to study the effects of soybean meal supplemented replacement by peanut meal supplemented with lysine and methionine on growth, apparent digestibility coefficient (ADC) and body composition of juvenile hybrid tilapia (*Oreochromis niloticus* × *O. aureus*) at

initial mean body weight of 7.30 ± 0.12 g, which were stocked in floating net cages suspended in an earthen pond. Five isonitrogenous and isoenergetic experiment diets (D1~D5) were formulated with low fish meal content (2%). D1 was used as control containing 30% soybean meal (SBM). D2 was formulated with peanut meal (PNM) replacing 50% SBM protein. D3~D5 were formulated on the basis of D2 supplemented with crystalline lysine (0.25%)+methionine (0.05%), microencapsulated lysine (0.25%) + methionine (0.05%) or microencapsulated lysine (0.50%)+methionine (0.10%), respectively. Chromic oxide (0.5%) was added as an external indicator to determine the ADC for nutrient or energy of the experimental diets. The results showed that no significant difference ($P>0.05$) were found among survival rates of the experimental diets. Specific growth rate (SGR) had no significant differences ($P>0.05$) between the control and D5, which were significantly higher ($P<0.05$) than the other three diets, and D2 resulted in the lowest SGR. Fish fed D2 and D3 had significantly higher ($P<0.05$) feed conversion ratio than D5 and the control. Fish fed D5 and the control had significantly higher ($P<0.05$) protein efficiency ratio than D2 and D3. Condition factor showed no significant difference ($P>0.05$) among the D4, D5 and the control, which were significantly higher than D2 and D3 ($P<0.05$). There were no significant differences ($P>0.05$) in viscerasomatic index and hepato-somatic index between the experimental diets. ADCs of dry matter, crude lipid, gross energy and essential amino acid had no significant difference ($P>0.05$) among the experimental diets. ADC of crude protein had no significant difference ($P>0.05$) among the microencapsulated amino acid supplemented diets and the control, however, which were significantly higher ($P<0.05$) than D2. Whole-body proximate and essential amino acid composition of the fish were not affected by replacement of SBM with PNM or supplement of crystalline or microencapsulated lysine and methionine. Compared to crystalline amino acid, the results indicated that dietary microencapsulated lysine and methionine supplements obviously improved the growth performance of juvenile tilapia and the ADC of dietary protein under the conditions of this experiment.

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